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Walnut 309

a very good essay - but much
rehearsed - Shilling -

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An Essay
On
The relative virtue of concentrated & compound medicines

By Albert Ritchie
of Maryland

An enquiry into the relative virtue of concentrated and compound medicines;

Or,

Researches into the comparative power, and efficacy of certain remedial vegetable agents in their integral forms, and the active ingredients in a separated and concentrated state.

The means that were resorted to by those who first pretended to practice medicine, were derived from the vegetable kingdom; which has, and still continues to furnish the healing art with agents abundant and varied, at the same time powerful and efficient, and that independant of abstract, or artificial aid.

But we are not limited in this class of bodies, merely to their natural forms: the extension and improvements in the science of chymistry, has rendered it, highly propitious to the experimentalist, and practical chymist to the obtaining a knowledge of their proximate and ultimate elements.

The collateral aids furnished the medical

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art, by the science of Chymistry, are inestimable; by it, we are taught the opposite habitudes of different bodies; and supplied with agents no where to be found in the productions of nature. This allegation, is particularly applicable to the means derived from the mineral kingdom. It is upon this class of bodies which in their natural state are for the most part inert, that it exercises a most efficient influence; and to which we are indebted for means, many of which, are the most powerful; and in variety so great that almost, if not every, indication in the treatment of disease, may be met by one or more of a mineral character.

But in the vegetable Kingdom, the utility of Chymistry, in a medicinal view, is not so extensive. It in fact is not so much required; nature has furnished her remedies already elaborated, from her infinitely more complex laboratory, and endowed with sufficient activity, in many instances, to meet the various demands of the case, to which they are adapted.

The thirst for innovation, which has shed an in-

interesting character upon the progress of science, in modern times, has no doubt resulted in much good, when conducted by a generous spirit of emulation; men have sought after the hidden treasures of nature's inexhaustible store, for the sake of their own aggrandizement, and the universal benefit of mankind.

This trait of character, has marked the abettors of the medical, as well as other sciences; and many of the improvements and discoveries are brilliant; and deserve to be recorded, to the honour, and perpetuation, of their authors' names.

Among the many improvements in medicine, I shall only notice such as are immediately connected with the subject I have embraced. Of this character what is termed, the art of prescription, partakes.

The simplicity of the means, which the Ancients possessed, before Chymistry became incorporated and inseparably connected with medicine, was only equaled by the complexity of this branch, a part, of science. Their prescriptions; if we are permitted to infer from those

those, which have descended to us, were in most instances, a heterogeneous medley, of vegetable productions; jumbled together, without reason, or induction; to hide their ignorance, and impose on the credulity of mankind.

Those which have been transmitted to later posterity on account of a spurious celebrity they had acquired, were retained perhaps, more for the sake of exciting surprise and astonishment, than any utility which they possessed; but more probably, from a sacred, or rather superstitious regard to their antiquity. For we are informed that it has not been many years, since a famous prescription termed Theriaca Andromachi constituted of no less, than seventy two ingredients, was expunged the British Pharmacopoeia.

We are no less surpaized at the presumption and audacity, with which Ultra Chymists have, from a fastidious regard to Chymical affinities, attempted to prescribe rules, as they suppose, essentially necessary; but really tending to curtail the resources, and weaken the energies of the healing art.

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By rescinding all such combinations, as are chymically incompatible, we should frequently be compelled to forego the advantages of remedies, however excellent experience may have found them to be; and indeed which incompatibility (the cause for rejection) would be the very source from whence their utility is derived.

A medium in all things as a general rule is best.

It should be the object in medicinal combination, both officinal and extemporaneous, to unite with the basis, or ingredient of most activity, such others, as will impart an increased efficacy, control immoderate or wrong action, while at the same time, the most agreable form compatible, should be communicated. To accomplish these purposes, certain principles, well laid down by an eminent Pharmacologist, should be observed; viz: that the basis, or medicine we look to, for the accomplishment of a particular indication, should have in combination, that which gives celerity to its operation, and is properly termed the adjuvans; secondly the Corrigens; that which corrects and modifies the operation, thirdly the constituens, or that which imparts an

agreable

agreeable form. Does scientifick prescription require such complexity? This does not comport with the enthusiasm, with which chymists have grasped after the medicinal elements of some of our best vegetable remedies; to the exclusion of other parts which they have termed inert. Whether this be a judicious mode of procuring our remedies, let men of experience decide.

Nature in general, is the best guide, and has made the most suitable combination in her productions.

She has proved herself abundantly competent to perform for the benefit and preservation of her creatures, that arrangement, and combination of the ingredients, in the aliment prepared for their use; and the air they breath, requires the same master hand, of Nature's chymist, to fulfil the purposes for which it is designed.

We would not pretend, to deprecate the exertions, of chymists, to reveal the secret and hidden constituents of bodies, because nature we suppose to have been the best judge, in combining their components in such proportions and kind, as is most suitable to those purposes for which they

they are intended. For instance the food and drink, which daily support us, and the air upon which we depend for our existence momentarily; may all for the sake of the perfection of chymical science, be investigated; and have their elements individually, or according to circumstances appropriated to other purposes of minor importance.

A question arises here, whether or not the science of medicine has been benefitted by the zeal with which vegetable remedies have had their medicinal elements sought after; and been compelled, in the language of a late author with regard to opium, but which we may extend to a number of others to "yeild their secret sources of action".

In reply, we must advert to experience, for a satisfactory answer; and ascertain, whether the power of combating disease, is invigorated by the substitution of an element in its pure state, for the compound.

Hypothetical reasoning, will not decide the question. The nature of disease is too complex, and obscure, to be levelled by analogical comparisons; to the chymical results of a remedy, which by repeated trials, has developed particular virtues,

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and exerted a certain influence, in particular modifications of morbid action —

It cannot be a legitimate corollary, that would affirm, that a particular element in a compound body, which though essentially and inseparally connected with the activity of that body, and when separated renders it inert, is of itself capable of commanding the same, or an increased quantum of the identical powers it possessed, when in its original combination — This perhaps would be the inference of hypothesis, but should not be received without the test of experience.

To prove the inaccuracy of inductions, drawn from chymical facts or premises, and the liability to err, when the practical purposes of the physician are at stake, by an analogy of the above import; we will select an instance e.g. Cinchona — This article has furnished, by chymical analysis, various elements, to several of which, different chymists have exerted their contemplative faculties, in ascribing to the one or other, the tonic powers of the bark — Deschamps supposed its febrifuge properties, to depend upon the cinchonat

-nat of lime found, in that article; and asserts in full faith of fact, that two doses of thirty six grains each, will cure any intermittent: on the other hand, Westring considered tannin another constituent of bark, to be the active ingredient— M. Seguin attributes all its virtues, to a principle contained in bark, possessing the property of precipitating tannin, and which he mistook for gelatine; and it is said, upon the faith of this blunder, the French, Italian, and German physicians, gave their patients, nothing but clarified glue in intermittent fevers! Fabroni concluded from his experiments, that the febrifuge property, does not belong essentially and individually to the astringent, the bitter, or any other soluble substance; since the quantity of these increase by protracted ebullition, whilst the virtues of the decoction evidently decrease— This only proves, that he was unacquainted with the chymical changes that occur, during ebullition—

Dr Paris, from whom, I borrow the above facts, has anticipated me in his remarks upon a set of discordant and opposite opinions, which could not be otherwise, when originating in chymical comparisons; and observes that

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"in the midst of those difficulties, experience interposes its aid, and demonstrates, that the virtues of bark must depend upon the combination of all its principles. For no preparation however carefully made, or scientifically combined, will equal, in efficacy, bark in the state of powder; even the ligneous fibre, which the chymist pronounces to be inert and useless, may produce its share of benefit by modifying the solubility of the ingredients, or by performing some mechanical duty which we are at present unable to appreciate.—

To attain to any degree of certainty in the knowledge of the effects of remedies, we should be acquainted with the ostensible circumstances, and phenomena peculiar to them, as presented to us: to do which we must proceed by observation experiment and analogy. Even these sources of information, are liable to perversion, and misconception, from the infinite variety of circumstances, by which they are influenced and modified: as well as by the prejudices of the human mind, which is ever ready to be influenced by the passions and self interested motives.

As to experience in the effects of the medicinal

elements

elements of vegetables, we do not pretend to offer our own, it being very limited. They are by some held in high estimation.

If we look to analogy, for a confirmation of our views upon this subject, we are led to the conclusion, that substances as compounded by the hand of nature, are indispensable to the well being of the animal economy. E.g. Witness the wisdom, manifested in the preparation of aliment, suited to the economy, and constitution, of the different species of animals; how variously the principle of nutriment is combined, not only as regards its quantity, in relation to the bulk, as in vegetable and animal food; but with respect to the presence of certain ingredients, which though possessing in themselves, no nutriment, yet appear indispensable to the healthy digestion of the animal.

It was singularly expressed by Hippocrates, that there is but one food; but there are various forms of food.

The conformation of the digestive apparatus, of some animals, indicates that they should receive a large bulk of food; such are the herbivorous: and consequently their food has its nutritive principle conjoined with much effete

effete matter — Others as the carnivorous, have a set of digesting organs less capacious, and not so vigorous; and necessarily receive their aliment, in a more concentrated form.

There are likewise certain principles which aid digestion. Salt is essential to the digestion of animals, living chiefly on animal food; and a bitter principle, resident in most vegetables, is as essential to herbivorous animals. —

It is known, that this bitter principle, performs the part of a natural stimulant only; for it passes through the body, without being diminished in quantity, or altered in quality. —

As an example, of the necessity of this principle in vegetables, to aid in their digestion, we will select the sheep; as my own observation and reading, has pointed it out to them more particularly. This animal will consume with avidity, such vegetables as contain the bitter extractive in considerable quantities; and ceteris paribus; thrive most where this abounds. — In the winter season, when they are confined to a dry provender, containing but little of this

this principle, they seek after and greedily devour any substance which contains it: and if they have access to, will injure an orchard very much, by decorticating the trees — The bark of the apple tree, contains a considerable quantity of the bitter principle; and is particularly relished by them — The fact is further corroborated, by the circumstance, that if they are confined on a diet of yellow turnips, in which little or no bitter extractive resides, and are not permitted to obtain it from any source, they become emaciated, sicken, and die from ignition for want of due vigour in the assimilating organs.

To extend this argument, predicated upon data, derived from analogy, we are necessarily involved in some points of a physiological character.

Although, a difference exists among physiologists, with regard to the properties of chyle, it is conceded by all to be the nutritive element, seperated from the food of whatever kind it may be — The allusion above made to the saying of the Father of Medicine, is supposed by some physiologists, to refer to the identity of the chyle

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derived from various forms of food – This opinion is now held, by many among the most eminent Physiologists of the present day; who deem it a homogeneous fluid, when the offspring of healthy digestion: and only changed by a morbid change in the organs tributary to that function –

On the contrary there are Physiologists of merited reputation, and deserved eminence in the profession, who consider the chyle, a fluid changed, according to the nature of the food taken by the animal.

We will not enter into a disquisition, of the merits or facts, giving origin to these different opinions. But for the sake of our subject, we will suppose it to be a homogeneous fluid. This I may state, that the chyle is ascertained to be a highly elaborated fluid, resembling the blood, bating the red colour, and a more complete assimilation, which it receives in passing through the lungs.

If the doctrine, that there is a uniformity of the chyle in health, is established, why so numerous in variety those bodies which yield it? May it not be that nature, which does naught in vain, has for its object,

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the accomplishment of some wise purpose. The animal senses, are enlivened by variety, and invigorated by change. And may we not suppose, that the organs whose office it is to support the corporeal fabrick, may receive additional impulse and renovated powers, by the various forms and combinations of food subjected to their action.

How inconsistent it would be, to throw aside the natural adjuncts of the nutritive principle, and present it to the organs of digestion in its elementary form, on the supposition we would thereby secure to the system a quantity of nourishment ad libitum! On the contrary as experience has shown, we should thereby pervert the purposes of nature, and derange her established order. The exercise of the natural functions, would be suspended by the act of thus securing the organs, from the necessity of performing those duties which they are designed to perform; and depriving them of the privilege of assimilating, in their own peculiar manner, that which is necessary to the support of the whole economy.

That concentrated aliment, could be administ-
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-tered long, without injuring the health, is impossible. — A due action in each organ, is requisite; a particular duty is assigned to each, which in health it ought to perform. — But if the food could be so elaborated, and perfected, as to be fitted for the nourishment of the system, without calling into requisition, the action of organs appropriated to the purpose; the dormant condition of those organs, it is reasonable to suppose, would be sufficient to induce disease. —

We will adduce for further illustration; another instance of the indispensableness of compound bodies, being presented to our organs, to be acted upon, according to their own economy; but in which ~~in which~~ the efficient agent, is an elementary substance. I mean, our aerial aliment, which according to chymical analysis contains, Oxygen, Nitrogen and carbon. Whatever else is found commingled with it, is extraneous, and inessential to the health of the animal that respires it. —

The atmosphere however, is a powerful solvent, and often charged with the volatile parts of foreign bodies

bodies; and that often without affecting the health of the living beings, it supplies with materials for respiration.—

But if, the constitution of the atmosphere be destroyed, or any other medium be substituted, the effects produced are incompatible, with the health of the being, as is shown in those who have been subjected, to experiments, made with pneumatick medicine— Some of the gases it is true will support life for a limited time; as some which contain a greater proportion of oxygen than atmospherical air.

But to arrive at the analogy which the example we have adduced affords; suppose we were to seperate, or analize the atmosphere, or procure in any manner, the vital air, which is indispensable to life and confine any animal to respire it; What would be the effect? Should we not infer from analogy, that the actions of life would be performed more vigorously? The experiment has been made, and its result was what might have been anticipated— It proves a stimulus to the powers, and functions of the animal economy; increases

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the excitement of the sanguiferous system, and an equal quantity of it, supports life four times as long as atmospheri-cal air. What the termination would be, by giving the animal a constant supply, I am not aware, having seen no experiment to ascertain the fact; but we might suppose what the event would be, from the preternatural state of the system superinduced.

Having premised thus much on the score of analogy, we arrive more immediately to the question involv-ing the subject of this essay. I mean with regard to the comparative efficacy, of certain alkalies found in some of our vegetables remedies; and which are considered the active and essential principles of their medicinal powers: as Quinine and cinchonin, in which reside the tonic vir-tues of bark;- Morphia the anodyne principle of Opium; and emetin, in which the emetic principle of ipecac-uanha reposes.

The salifiable base of cinchona, in which its virtues reside, and termed quinine; was first pro-cured by two french chymists, Pelletier & Caventou

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a description of which substance, was published by them, & has been since employed extensively in some parts of the United States.

The efficacy of Quinine, in some of the diseases to which the bark is applicable, particularly intermittent fever, was sufficiently attested by the physicians of the Paris hospitals, to be equal, if not superior to the bark itself. And in this country, particularly in the large cities, it has superseded the bark in many of the diseases to which the latter article is adapted.

One of the advantages of Quinine at least, is the convenience of administering; the quantity is very ~~very~~ small for a dose; and for that reason probably less apt to be rejected, where the stomach is delicate, and irritable, and likely to be oppressed by taking in large bulks of offensive medicine. This element of bark, is said to offer an example, of the utility of chymistry to medicine; and to be one of the first consequence. I am however sceptick with regard to its ever becoming so generally used, as to exclude the bark altogether — — — — — — —

The efficacy of some medicines are enhanced beyond a doubt, by combination. This is particularly the case, where the adventitious or seemingly superfluous ingredient, whether united artificially, or by natural growth, partakes of the bitter principle; of the latter, elaterium and senna may be adduced as instances; both of which (active cathartics,) have their operation impaired by the loss of the bitter principle; which loss may occur in a natural way, by the article being transferred to a different soil. Its activity may be again restored, by the addition of a bitter as gentian. It is supposed this increase of active properties, arises from the invigorating influence of bitters, upon the alimentary canal; thus heightening its susceptibility to the impression of medicine.

Peruvian bark, possesses a considerable quantity of the bitter principle; and its virtue was supposed by Dr Cullen, to depend on the combination of bitter and astringent qualities.

The virtues of many medicines, are heightened by a union with others of an entirely different nature.

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May we not infer from this, notwithstanding the weight of testimony in favour of Quinine, as being superior to the bark itself, that in as much, as this union of proximate principles is dissolved, upon which depends, in a variety of instances, the force and virtue of the medicine; that the same influence, operates in giving to the bark that superiority as a tonic above all other vegetables? That it is so, I think is beyond a doubt; Since, no preparation, not even of the bark itself, hitherto known, was ever found equal in its remedial powers, to the medicine itself, in a pure, and unimpaired condition; until the quinine came into vogue. —

Quinine is subject to the same rules, and restrictions, with the bark, and is recommended in preference, from the more convenient form of exhibition, added to a more energetick, and permanent effect in the cure of those diseases to which it is applicable. To this evidence in its favour, proceeding from the high source it does; we feel inclined to give all credit, and yeild all our prepossessions against it, derived from a limited experience and

and observation, which does not by any means, correspond with the above testimony, in favour of the article under consideration.— From our own experience, we can safely say, that we have derived no such advantage from the use of Quinine, as would be calculated to establish in our estimation, its superiority or even equality, in point of energy or permanency, with genuine bark.—

But we ought to bear in mind, that we have a vital principle to deal with, whose laws are not mechanical, therefore not to be governed by any invariable rule of art: A principle, to us apparently, extremely whimsical, & capricious, setting at defiance the best laid schemes of the skilful and profound, and working wonders with the most simple & uncomplicated means, that can be imagined! altogether surpassing any scope of human comprehension!—

As medicines commanding an exorbitant price, are liable to adulteration, by the sordid, self interested being, who holds his gold in estimation above the lives of his fellow creatures; it generally follows that a corresponding deterioration takes place, to the disappoint-

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-ment of physician and patient; the former of whom may have received the medicine under the highest encomiums, bestowed upon it; not in the fustian rhapsody of quacks; but by the first men in the profession, whose reputation is sustained in a measure, by the verity of the facts they promulge.

I feel very little doubt, that a medicine commanding some hundred dollars per pound, would not offer some inducement, to the dishonest to adulterate.— This is a dis-advantage attending many of the high priced drugs.—

The next medicinal element we come to, is Morphia; a name conferred upon the anodyne princi-ple of opium.—

The opium itself, is well known to be produc-tive of certain injurious effects upon the animal economy; either when taken in too great an amount at a dose, or by protracted use; and in some idio-syncracies of constitution, altogether inadmissible. This is attributed by Magendie to a noxious prin-ciple: he terms Narcotine.

The Narcotine, is seperated from the

anodyne

anodyne principle morphia, by a process first suggested by M Robiquet. The importance of the discovery is self evident. But why is the morphia so little used? I presume it may be owing to the circumstance, of so small a quantity being obtained, and the comparatively large dose required; which renders it a much more costly medicine. But a much more probable reason exists, in the fact, that we have an agent, capable in a certain degree of counteracting the narcotic, & increasing the anodyne property of opium; which is the acetic acid; and it is this which renders the black drop superior to the other preparations of opium, in certain constitutions which suffer from their use.

There are likewise other articles of the Materia Medica, possessed of anodyne properties, and devoid of some of those pernicious consequences, attendant upon the protracted use of opium and its preparations; such are said to be the extract of hyosciamus, lactucarium &c These circumstances combined, may serve perhaps to render the morphia an article of little note at present.

Ipecacuanha is the last article in our selection, the active principle of which, we shall attempt to compare with itself in a medicinal view.

To the active principle of Ipecacuanha, the appellation of emetin is given; which as procured by Magendie and Pelletier, is considered an article of great activity and proved so, by their own experiments on different animals and on man; and also by the subsequent trials of numerous others.—

The Chymical and Physiological researches of these gentlemen, relative to the properties of the different Species of Ipecacuanha, are highly interesting; but agreable to our intentions all along, we will notice only those circumstances, relating to their medicinal virtues; for which purpose we can do not no better than relate, in their own or nearly the same language, their experience with the emetin.

Ipecacuanha has a relationship to the mucous tissue, as is manifested by its efficacy in diseases of that tissue, such as catarrh, diarrhoea, & dysentery; where its

its influence is decided. The same relationship, was discovered in the emetin, by the physiological researches of Magendie & Pelletier. They say that in animals to which excessive doses of emetin had been given, so as to produce death, dissection revealed the parenchyma of the lungs, and the mucous membrane of the intestines, highly inflamed. In smaller doses it proved an active and very effectual emetic.

The happy results of comparative experiments, induced them, to try the emetin upon themselves, and, others; which they did, with corresponding results, and entirely commensurate with their anticipations; that, the active principle in its concentrated form, ought to be proportionably superior in efficacy. Its peculiar powers were manifested in relieving the chronic catarrh of old people; hooping cough of children, and other pulmonic affections.

The superiority of emetin as an emetic, they consider decided, and assert, that it possesses all the advantages, without the bad effects, of ipecacuanha;

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that it has not the strong and nauseous smell of ipecacuanha; the taste of the latter is acrid, and disagreable, emetin only a little bitter. The quantity of ipecacuanha necessary to produce vomiting in the same subject, often varies; it depends not only upon the quantity of emetin, the ipecacuanha contains, and the quantity differs not only in the several roots designated under the general appellation of ipecacuanha; but in the mode of preparing the powder. We are obliged to carry the dose to 15 or 40 grains; when given in such large doses its smell and taste are insupportable; portions of it adhere to the mouth, pharynx & esophagus. These are inconveniences so great to some people, that they have an invincible dislike to it — —

Emetin dissolving in water, and operating in doses of 2 or 4 grains powerfully, can never have these inconveniences. Another advantage, is that of being enabled, to annul its effects, as soon as we wish, by the introduction into the stomach, of a slight decoction of galls. "Further we judge" say they "that in the practice of Medicine

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it will in most cases, be a preferable substitute to ipecacuanha".

The conclusions drawn from their experiments I think necessary to state; although the facts from which they are deduced, are not all quoted. They are as follows

"1st That there exists in those species of ipecacuanha most frequently in use, the analysis of which we have made known (viz the brown the grey & the white)" a peculiar substance that we have called emetin; to this is due the medicinal vertues of those plants.

2nd That this substance purges, and vomits: it has a specific action upon the lungs and mucous membranes of the intestinal tube; and further that it possesses a marked narcotic power.

3rd That emetin may be used instead of ipecacuanha, in all cases wherein the latter is used; and the more readily as this medicine in a determinate dose, produces invariably the same effect, which is not the case with ipecacuanha of commerce: and from the very little taste and scarcely any odour its superior advantages as a medicine are striking."

That clause in the third conclusion, which asserts the effects of emetin to be invariable; as made from the experiments of Magendie & Pelletier, I believe to be erroneous; for no medicine operates invariably, either by virtue of quantity or quality. Ipecacuanha when given in small doses, with a view to its diaphoretic properties, and in some instances when combined with one of our most powerfull antiemetics, viz opium forming what is usually termed Dovers powder, will puke: proving that a particular condition of the excitement, in an organ, will modify the operation of our remedies, and render it necessary for us to adapt them, to the forms, and modifications of that principle, in the animal economy, which the physician has to contend with, in changing, regulating modifying &c

We think it unnecessary to adduce further examples of the vegetable remedies, which have had their active principles reduced to an elementary form. They are numerous; and in a physiological view would involve considerable tautology to recount them.

If the spirit of investigation continues we think

think, ere long, the whole catalogue of vegetable reme-
-dies, will have "yeilded their secret sources of action"

But if the utility of concentrated vegetable remedies
be established by experience; and is found in one in-
-stance, to have their remedial powers enhanced, and the
Materia Medica thereby enriched. it will be sufficient
encouragement for the prosecutors of that science, to con-
-tinue their researches.

It is certainly desirable to obtain even a wider
scope or latitude, in the use of the same, or similar
means: as it is well known that such is the variety
of shades in morbid excitement, and the derangements
of the animal economy, that remedies possessing the
very same fundamental principles of action, must
give place to others, modified only by form or com-
-bination, whose essential operative principle is iden-
-tical.